

When are CRM Systems Successful? The Perspective of the User and of the Organization

Gerrit H. van Bruggen and Berend Wierenga

ERIM REPORT SERIES <i>RESEARCH IN MANAGEMENT</i>	
ERIM Report Series reference number	ERS-2005-048-MKT
Publication	September 2005
Number of pages	50
Persistent paper URL	
Email address corresponding author	gbruggen@rsm.nl
Address	Erasmus Research Institute of Management (ERIM) RSM Erasmus University / Erasmus School of Economics Erasmus Universiteit Rotterdam P.O.Box 1738 3000 DR Rotterdam, The Netherlands Phone: + 31 10 408 1182 Fax: + 31 10 408 9640 Email: info@erim.eur.nl Internet: www.erim.eur.nl

Bibliographic data and classifications of all the ERIM reports are also available on the ERIM website:
www.erim.eur.nl

ERASMUS RESEARCH INSTITUTE OF MANAGEMENT

REPORT SERIES *RESEARCH IN MANAGEMENT*

ABSTRACT AND KEYWORDS	
Abstract	The individual impact of CRM systems is strongly related to impact at the organizational level. Fit with the task of the user is key. CRM systems are successful in organizations that reward customer-centric behavior and that have an analytical decision style. Acceptance of a CRM system should be monitored over time.
Free Keywords	Customer Relationship Management, Marketing Management Support Systems, Survey Research
Availability	The ERIM Report Series is distributed through the following platforms: Academic Repository at Erasmus University (DEAR), DEAR ERIM Series Portal Social Science Research Network (SSRN), SSRN ERIM Series Webpage Research Papers in Economics (REPEC), REPEC ERIM Series Webpage
Classifications	The electronic versions of the papers in the ERIM report Series contain bibliographic metadata by the following classification systems: Library of Congress Classification, (LCC) LCC Webpage Journal of Economic Literature, (JEL), JEL Webpage ACM Computing Classification System CCS Webpage Inspec Classification scheme (ICS), ICS Webpage

When are CRM Systems Successful?
The Perspective of the User and of the Organization

Gerrit H. Van Bruggen

Berend Wierenga

September 2005

Department of Marketing Management
RSM Erasmus University

P.O. Box 1738
3000 DR Rotterdam
The Netherlands
Tel: +31-10-4082258
Fax: +31-10-4089011
E-Mail: gbruggen@rsm.nl

We thank Zhimin Chen for her contribution to the data collection.

When are CRM Systems Successful?

The Perspective of the User and of the Organization

Abstract

The individual impact of CRM systems is strongly related to impact at the organizational level. Fit with the task of the user is key. CRM systems are successful in organizations that reward customer-centric behavior and that have an analytical decision style. Acceptance of a CRM system should be monitored over time.

Introduction

The information technology revolution and, in particular the World Wide Web has offered companies new ways of interacting with their customers, and Customer Relationship Management (CRM) has become the new “mantra of marketing” (Winer 2001). CRM concerns the enterprise approach aimed at understanding and influencing customer behavior through meaningful communication in order to improve customer acquisition, customer retention, customer loyalty, and customer profitability (Swift 2001). The implementation of the CRM approach in companies usually entails the creation of a comprehensive information system, the “CRM system”. The core element of a CRM system is a data-base with data about customer characteristics (e.g., demographics; customer size, and industry for business-to-business customers), data about company-customer contacts, data about the way the customer has responded to earlier company offers, and data about the customer’s purchase history with the company (Glazer 1999). In addition, CRM systems usually contain analytical tools to analyze data and generate information that can be used for subsequent marketing actions. Furthermore, sales force automation, data warehousing, customer service automation, and call center systems can be elements of CRM systems.

CRM systems offer support in two different ways. First, CRM systems facilitate the day-to-day interactions with customers. We call this way of employing the system the *operational use* of CRM systems. Second, customer data in CRM systems can enable firms to leverage on data about their current customers (Kamakura, Wedel, de Rosa, and Mazzon 2003). The use of customer databases and analytical tools creates opportunities for cross-selling new products and services to existing customers. Information from the CRM database can be used for developing customer acquisition and customer retention strategies, and for the optimization of customer equity (Blattberg, Getz, and Thomas 2001; Rust, Zeithaml, and Lemon 2000). We call such use of CRM systems the *strategic use* of CRM systems.

The principles of the CRM approach are appealing and nowadays companies increasingly organize themselves around their customers. In a survey about management tools (Rigby, Reichheld, and Schefter 2002) 72% of the responding executives expected to have CRM programs in place within a year. The CRM approach was found to be the fastest-growing management technique in eight years. There is now a sizeable industry of suppliers of CRM systems. According to a recent IDC estimate, the worldwide sales of customer relations management (CRM) applications (software) currently grows with 8.9% per year with a projected revenue level for the year 2008 of \$ 11.4 billion. Furthermore, many success stories have been documented where the use of CRM systems has led to a significant improvement of the effectiveness of the firm's customer relationships and its performance.

Despite optimism about the growth and impact of the CRM approach and CRM systems, commentaries in the practitioner press have also suggested high failure rates (Speier and Venkatesh 2002). An often cited study by the Gartner group (Nelson 2002) reports a CRM implementation failure rate of 55%. According to Rigby et al. (2002) in their survey among 451 senior executives, one in every five users reported that their CRM initiatives not only had failed to deliver profitable growth, but also had damaged long-standing customer

relationships. In one case the CRM system was so “frighteningly slow”, that salespeople in the field found themselves unable to download customer information from the company’s databases onto their laptops. Such user-unfriendly systems are counterproductive.

The negative experiences mentioned above should not be reasons to abandon the CRM approach altogether. On the contrary, “Getting CRM right is important and urgent. CRM has arrived and now it’s up to the users to make sure that it pays its way by avoiding the major pitfalls” (Rigby et al. 2002). A recent study by Reinartz, Krafft, and Hoyer (2004) provides support for the claim that the CRM approach *can* improve firm performance. Based on an empirical study among 211 companies in Austria, Germany, and Switzerland, the authors report a positive relationship between the implementation of CRM processes and company performance. CRM processes and systems thus offer a lot of potential and it is, therefore, important to develop insight in how to realize these effectiveness gains.

Academic research on CRM has only recently started to get published (i.e., see for example the CRM special section in the Journal of Marketing October 2005 issue). This research often deals with the data contained in a CRM system, rather than with CRM systems as such. The focus of our paper is on CRM systems. We study the effects of its use within companies, both for operational and strategic purposes. Our purpose is to develop insight in the factors that are related to the impact of CRM systems on company performance in terms of customer satisfaction and retention, financial results, and the efficiency of interaction with customers. In this respect our approach is different from the study of Reinartz et al. (2004) who took a *CRM process* perspective. They studied to what extent a company has processes in place for managing relationships with its customers and how this affects company performance. In theory, these CRM processes could be implemented without any CRM *system* at all. Although they did not take an information system perspective as such, Reinartz et al. (2004) did include “CRM technology” in their research model. Interestingly, this variable, which

was measured as the amount of money a company invested in technology for CRM purposes, was sometimes found to have negative effects on company performance. This suggests that effective CRM policies are not a matter of spending a lot of money on technology but much more of having CRM systems effectively attuned to the tasks of users within companies. Therefore, we need to develop insight in when, under which conditions CRM systems improve organizational performance. This is especially necessary given the high costs involved with investments in CRM systems (usually several millions of dollars per implementation, but sometimes even going up to numbers like \$30 million).

Articles on CRM tend to emphasize that it is primarily about aligning business processes with customer strategies (Day 2003; Rigby et al. 2002). The role of technology gets less attention. We do not argue that the company orientation (e.g., customer-centeredness) and -organization (e.g., alignment of the organization towards building customer relationships) are not fundamental for the success of CRM. However, this does not imply that *CRM systems* should be taken for granted. If we know which factors are related to CRM system success, this helps to implement them more successfully. A CRM strategy, which is optimal from the point-of-view of the company orientation and the organizational characteristics, will become only more successful when optimally fitting CRM systems are in place.

Research Framework

When do CRM systems affect company performance and what are the key factors that are associated with the impact of these systems? The theoretical foundation for answering this question comes from the (general) field of information systems (IS) research (Alavi and Joachimsthaler 1992; DeLone and McLean 1992; Goodhue and Thompson 1995), from the field of marketing management support systems (Little 1970; Lilien, Kotler, and Moorthy 1992; Lilien and Rangaswamy 2004; Wierenga and Van Bruggen 2000; Wierenga, Van Bruggen, and Staelin 1999), and from CRM research (Reichheld 1996; Reinartz et al. 2004;

Reinartz and Kumar 2003; Reinartz and Kumar 2000; Verhoef 2003; Winer 2001).

Information systems research has paid a lot of attention to the issue of defining the success of an information system (e.g., DeLone and McLean 1992; Ives and Olson 1984; Zmud 1979).

DeLone and McLean (1992) developed an integrated model in which a range of different success variables is defined. This runs from the systems' technical dimension (e.g., data accuracy, reliability) to the effectiveness of the systems (e.g., better decisions, improved productivity). Our main interest here is in the latter aspects, which are directly related to the effectiveness of CRM systems. DeLone and McLean distinguish two different levels for information system effectiveness: the *Individual Impact* and the *Organizational Impact* of these systems.

Individual Impact refers to the effect of the CRM system on the user of that system. To what extent does this information help the user to be more effective, increase the user's productivity, improve job performance and/or make the job easier? Organizational Impact refers to the effect of the CRM system on organizational performance. To what extent does the system contribute to better performance, e.g., leads to quicker response to customer requests, higher customer satisfaction, generates higher sales volumes, and larger market shares? Improving organizational impact is the ultimate goal of a CRM system. However, it is important to realize that individual impact is the means to accomplish organizational impact. The information from the CRM system has effect on its users, on the outcomes of their decisions, and, thereby on the results of the company.

--- Insert Figure 1 about here ---

In our research model (see Figure 1) the Independent Variables will affect Individual Impact. Following on this, Individual Impact affects Organizational Impact. We think that much of the effects of the independent variables on Organizational Impact will be mediated through Individual Impact. However, as is shown in Figure 1, some of the Independent Variables can

also have a direct effect on Organizational Impact.

As dependent variables for the analysis of Individual Impact we study Perceived Usefulness and User Satisfaction. The *Perceived Usefulness* of information systems construct was developed by Davis (1989) and has been widely applied, in particular in the context of the so-called technology acceptance model (TAM). Perceived Usefulness is the extent to which a person believes that using an information system will enhance job performance. Davis (1989) found Perceived Usefulness to be significantly related to both current use of information systems and future use. In a recent study Perceived Usefulness was found to be the most important predictor of system use intention, which in turn was the most important predictor of actual use (Venkatesh, Morris, Davis, and Davis 2003).

In the IS literature two different conceptualizations of the construct of *User Satisfaction* with information systems can be found. The first one is specifically oriented towards satisfaction with the *information* that the information system provides (Blake, Olson, and Baroudi 1983). This interpretation of User Satisfaction is often referred to as user *information* satisfaction (UIS). The second conceptualization of User Satisfaction is the *overall* satisfaction of the user with the information system. In this interpretation, user satisfaction (US), abbreviated as US, has a broader meaning and includes how much the system helps to achieve the goals of its user(s). In this study we use the broader interpretation of user satisfaction. (Bailey and Pearson 1983) developed a measurement instrument for *User Satisfaction* with information systems. User Satisfaction is the most commonly studied dependent variable in IS research (DeLone and McLean 1992; Gelderman 1997)). In several empirical studies, a positive relationship with performance has been found (Etezadi-Amoli and Farhoomand 1996). Goodhue and Thompson (1995) introduced the *Task Fit* construct for explaining the success or failure of information systems. Task-Technology Fit (TTF) is “the degree to which a technology assists an individual in performing his or her portfolio of tasks” (ibid, p 216).

Their research highlights the importance of the fit between technologies and users' tasks for achieving individual impact from information technology. The task-technology fit hypothesis argues that for an information system to have a positive impact on performance, it must be designed and utilized in such a way that it fits with the tasks it supports (Lim and Benbasat 2000). In their "Technology-to-Performance-Chain" Goodhue and Thompson (1995) position TTF between the characteristics of the task and the technology on the one hand, and impact on the other. When a technology provides features and support that fit the requirements of a task this can be expected to have a positive effect on performance (Zigurs and Buckland 1998). Venkatesh et al. (2003) find fit to be an important predictor of system use intention. In our model Task Fit is positioned between the Independent Variables and the Individual Impact variables (see Figure 1). We expect that Task Fit mediates an important part of the effects of the Independent Variables on Individual Impact.

We distinguish three different indicators for the Organizational Impact of the CRM system. Since a CRM system is especially suitable to improve customer satisfaction, customer retention, and cross selling (Reichheld 1996; Winer 2001), our first Organizational Impact indicator, Customer/Market Impact, is geared towards these effects of a CRM system. The effects of a CRM system should ultimately translate into improved financial results for the company. Our second Organizational Impact indicator, Financial Impact, measures the effects of a CRM system on revenues and profitability. Finally, as is recognized in the information systems literature, in addition to higher revenues, cost reductions and higher efficiency can also be an effect of an information system (DeLone and McLean 1992). Therefore, our third Organizational Impact indicator is related to the extent to which the CRM system helps to respond quicker to customers' request and to save time in the interactions with customers. We call this the Customer Efficiency Impact of a CRM system. We will now discuss the hypotheses with respect to the relationships between the

independent variables and the Individual - and the Organizational Impact.

User Characteristics

User Characteristics are expected to affect Task Fit and the Individual Impact variables.

Job Domain (Management/ IT)

Within organizations two different types of employees typically interact with CRM systems.

These are users with a management background (mostly marketing or sales) and users with an IT background. Since a CRM system is primarily geared at optimizing interactions with customers and markets we expect that for users with a management background a CRM system fits better with their task. Consequently, users with a management background will perceive CRM systems as more useful and will show higher user satisfaction than users with an IT background. For the latter group, CRM systems will be just another piece of software. We hypothesize:

H1: CRM systems will show a higher Task Fit (a) and a more positive Individual Impact (b) for users with a management background than for users with an IT background

Attitude towards Information Technology

The general attitude towards information technology has been found to be an important explanatory variable for the use of specific information systems for a long time already. The theoretical basis for the effects of this variable lies in the context of the Technology Acceptance Model (Davis, Bagozzi, and Warshaw 1989). We expect that users with a more positive attitude towards the use of information technology for business purposes in general will also perceive a specific CRM system as more useful and will experience higher satisfaction from using such a specific system. We hypothesize:

H2: The attitude towards information technology in general will be positively related to the Individual Impact of CRM systems.

User Age

Research has shown that user age is positively related to information search (Taylor 1975; Wierenga and Ophuis 1997; Zinkhan, Joachimsthaler, and Kinnear 1987). Since the main characteristic of CRM systems is that they contain a lot of information, we expect that especially older users will perceive these systems as useful and that these users will also be more satisfied with these systems. We hypothesize:

H3: User Age will be positively related to the Individual Impact of CRM systems.

Experience with Using the CRM system

Getting familiar with a new information system and being able to understand and fully exploit the opportunities such a system offers, simply takes time. Several authors have stressed the importance of users experience with the use of systems for the likelihood of success (e.g., DeLone 1988; Guimaraes, Igarria, and Lu 1992). We hypothesize:

H4: Experience with Using the CRM system will be positively related to its Individual Impact.

CRM System Characteristics

CRM System Sophistication

The sophistication of a system refers to the number and quality of its functionalities.

Functionality refers to the possibility to collect, store and retrieve data and, to transform data into information by means of statistical analysis, and to support customer interaction. More sophisticated CRM systems will be more powerful and we expect these systems to be perceived as more useful by its users and also to be more satisfying. Furthermore, systems that include the above mentioned functionalities will facilitate a more effective and efficient interaction with customers. Wierenga and Ophuis (1997) indeed did find such a positive relationship between systems sophistication and system impact. We hypothesize:

H5: CRM System Sophistication will be positively related to both the Individual Impact (b) and the Organizational Impact (c) of these systems.

CRM System Flexibility

Flexibility, also called adaptability, is one of the “classics” among the critical factors explaining the success of information/decision support systems (Barki and Huff 1990; Little 1970; Udo and Davis 1992). More flexible systems can be adapted more easily to the requirements of the decision situation and the specific needs of its users. We, therefore, expect a positive effect of system flexibility on Task Fit. Furthermore, we expect that users will appreciate systems that can easily be adapted and are flexible. Finally, we expect that systems that can be adapted to new decision situations will also be more effective for organizations in their interactions with customers and markets. Therefore, we hypothesize:

H6: CRM System Flexibility will be positively related to Task Fit (a), the Individual Impact (b), and the Organizational Impact (c) of these systems.

Information systems integration can be decomposed into two elements: data integration and technical (system) integration (Wyse and Higgins 1993). Data integration refers to the relevancy of the information that is collected, processed, and disseminated throughout the organization. Technical (system) integration concerns the physical or of formal linkage of information systems and subsystems that are used in the organization.

Data Integration

This variable refers to the extent to which different data (e.g., demographics, interaction data, transaction data, etc.) from various sources (e.g., marketing, sales, and accounting) are integrated in the CRM system at hand. In general the presumption has been that greater data integration is universally desirable and leads to greater benefits for organizations (Goodhue, Wybo, and Kirsch 1992). When the CRM system integrates data from various sources it will more easily fit with the tasks it needs to support. With all the data integrated in one system it will be easier for companies to serve customers effectively through different channels in an integrated way. We hypothesize:

H7: Data Integration will be positively related to Task Fit (a), the Individual Impact (b), and the Organizational Impact (c) of CRM systems

(System) Integration of the CRM system with other Information Systems

Information system integration is the extent to which applications can be shared and accessed for organizational use (Wyse and Higgins 1993). To support intraorganizational business processes effectively, existing information systems must be integrated (Hasselbring 2000). CRM systems differ in the extent that they are integrated with other information systems (e.g., financial or manufacturing systems) in the organization. A priori, we think that this type of integration does not have an effect on the individual user (who mostly is active within the domain of marketing), but that more integrated systems will be beneficial at the organizational level. We hypothesize:

H8: *System Integration will be positively related to the Organizational Impact of CRM systems*

Ease of Use

Ease of use is the degree to which a person believes that using an information system would be free of effort. It is one of the “classical” concepts in information systems research (Davis 1989; Sanders and Manrodt 2003; Venkatesh 2000). A significant body of research in information systems has accumulated that provides evidence for the existence of an effect of perceived ease of use on initial user acceptance and sustained usage of systems (Venkatesh 2000). The Technology Acceptance Model (TAM) (Davis 1989) suggests perceived ease of use to determine one’s behavioral intention to use a technology, which has been linked to subsequent behavior. TAM also suggests that ease of use will influence perceived usefulness because the easier a technology the more useful it can be (Venkatesh 2000). Similarly users can be expected to be more satisfied with systems they can use easily. We expect that Ease of Use will especially affect individual users’ evaluations of systems and do not expect Ease of

Use to have a direct effect on the Organizational Impact variables. We hypothesize:

H9: Ease of Use will be positively related to Task Fit (a) and to the Individual Impact (b) of CRM systems

System Age

CRM systems are relatively new types of information systems. Over the recent years, vendors of CRM systems have invested large amounts of resources in the development and further improvement of these systems. This means that systems have become more sophisticated and advanced. Older systems may have become outdated, and more recently developed systems will therefore probably perform better than older systems. Therefore, we hypothesize:

H10: System Age will be negatively related to Task Fit (a), to the Individual Impact (b) and to the Organizational Impact (c) of CRM systems.

CRM System Implementation Characteristics

The success of CRM systems is not only a matter of developing a high quality system. The way in which the implementation of the system in an organization is taking place is at least as important. There is a large literature in the general IS/DSS field about the effects of implementation characteristics on the success of IS (e.g., (Alavi and Joachimsthaler 1992; DeLone and McLean 1992; Zmud 1979). In the marketing literature, these implementation variables have also been shown to be important (e.g., Wierenga and Ophuis 1997; Zinkhan et al. 1987). In our study we included the following implementation characteristics:

Training and Support

In the diffusion of an information system within an organization, users will be influenced by training (Leonard-Barton and Deschamps 1988). In the context of information systems, training refers to the provision of hardware and software skills sufficient to enable effective interaction with the DSS under consideration (Alavi and Joachimsthaler 1992). Proper training of end users is an important strategy for minimizing resistance (Adams, Berner, and

Wyatt 2004). We expect that the training and support of individual users will make them more effective in using CRM systems in an appropriate way and also helps them to recognize which features the system possesses and how to exploit these. We expect Training and Support of users to have a positive effect on Task Fit (users learn better how to use the system for the support of their tasks), and on Perceived Usefulness and User Satisfaction. We hypothesize:

H11: Training and Support will be positively related to Task Fit (a), and to the Individual Impact (b) of CRM systems.

Top Management Support

There is strong agreement in the IS literature that top management support is a key factor for successful IS/DSS implementation and use success. A survey on the success of management tools and techniques (Rigby 2001) shows that strong top-down support is important for a successful implementation of these tools. Leonard-Barton and Deschamps (1988) note that whether management support or urge is necessary to make an individual user adopt will depend on the individual characteristics of the end-user. Overall communication by top management of the merits of the CRM system and the support of its use will have a positive effect on individual users' evaluations. Furthermore, it will also stimulate users to employ CRM systems and in a way that maximizes the organizational benefit. Therefore, we also expect direct effects of top management support on Organizational Impact. We hypothesize:

H12: Top Management Support will be positively related to Task Fit (a), to the Individual Impact (b), and to the Organizational Impact (c) of CRM systems.

Role of Consultants

Consultants can be beneficial in information systems implementation by filling in the experience - and knowledge gaps of their clients (Adams et al. 2004). External consultants, both IT consultants and management consultants, will also play an important role in the

implementation of CRM systems. At the level of the individual user, the effect of consultants is comparable to that of the training and support discussed earlier. Hence we expect positive effects on Task Fit and the Individual Impact of CRM systems. Furthermore, we expect that especially management consultants will also emphasize the potential to improve the organizations results by using a CRM system. Therefore, we also expect a positive relationship with the Organizational Impact of CRM systems. We hypothesize:

H13: The importance of the Role of Consultants will be positively related to Task Fit (a), to the Individual Impact (b), and to the Organizational Impact (c) of CRM systems.

Project Champion.

The presence of champions supporting the innovation has been associated with higher innovation success in the literature on new product management and in the general literature about innovation (Leonard-Barton and Deschamps 1988). A project champion will communicate the advantages and features of the CRM system to individual users. This will help individual users to determine whether the system will fit with their task and whether it is useful for the performance of their tasks. For persons in the organization that actually use the system, this can be expected to have a positive impact on task fit, perceived usefulness and user satisfaction.

H14: The Presence of a Project Champion will be positively related to Task Fit (a) and to the Individual Impact (b) of CRM systems.

CRM System Use Characteristics

CRM systems can be used for different purposes, in different ways, and by different numbers of people within the organization. We study two characteristics of CRM System Use.

Strategic Use

CRM systems can be used for various purposes. We distinguish two types of use: operational use and strategic use. With operational use we mean the use of the CRM system for day-to-

day interactions with customers. With strategic use we mean the use of a CRM system for gaining insight about opportunities in the market and how to make use of these opportunities in an optimal way (e.g., acquisition, retention, and optimizing customer equity). Systems that are used in the latter way will usually be the more sophisticated ones. At the organizational level, strategic use has the purpose to increase the effectiveness of the CRM system and can therefore be expected to have a positive effect on the Customer Impact and the Financial Impact of systems. We hypothesize:

H15: The Strategic Use of a CRM system will be positively related to the Customer Impact and the Financial Impact of CRM systems.

Intra-Organizational Adoption Rate

We expect that the extent to which employees within an organization have adopted the CRM system will have an effect on the Organizational Impact of the CRM system. The more people within an organization use the CRM system, the larger the Organizational Impact will be. We hypothesize that:

H16: The Intra-Organizational Adoption Rate of a CRM system will be positively related to the Organizational Impact of CRM systems.

Organizational Characteristics

The characteristics of the organizational setting in which a CRM system is being used may affect especially the organizational impact of these systems.

Rewards for Customer-Centric Behavior

The incentive structure within an organization can be expected to affect the way CRM systems are being used. Reinartz et al. (2004) found that organizational alignment (including rewards for employees for building relationships with customers) had a positive effect. The use of appropriate incentives is an important means of keeping people in an organization focused on customers (Day 2003). If an organization rewards its employees for building

relationships with customers it will be useful for these employees to use CRM systems and individual users can also be expected to be more satisfied with these systems. The impact of CRM systems for the overall organization will also be higher if the organization rewards customer centric behavior because this will stimulate both the number of employees using the systems and the intensity of use. We hypothesize:

H17: The presence of Rewards for Customer-Centric behavior will be positively related to Task Fit (a), the Individual impact (b), and the Organizational Impact (c) of CRM systems.

For the organizational characteristics that follow below we only expect relationships of the use of CRM systems with the organizational impact.

Interdepartmental Coordination

Customer relationship management is a matter of the whole organization (Rigby et al. 2002; Day 2003). For effectively serving customers various interdependent departments will have to cooperate. Effective communication and sharing of information will be important in such cases. CRM systems that integrate all information will support interdepartmental coordination. The other way around, the more communication and coordination about the implementation and use of CRM systems between departments, the lower the uncertainty about these systems and the more likely their adoption by various departments and different users (Abrahamson and Rosenkopf 1997). Interdepartmental coordination is thus a favorable condition for a CRM system implementation and use. In particular, the processes directed at customers will benefit. We hypothesize:

H18: Interdepartmental Coordination will be positively related to the Organizational Impact of CRM systems.

Customer Orientation

Organizations will differ with respect to the extent that they are customer oriented. We expect

a CRM system to be particularly effective for companies that are customer oriented since this is the type of market orientation that CRM systems support. Therefore, we hypothesize:

H19: Customer Orientation will be positively related to the Organizational Impact of CRM systems.

Analytical Organizational Decision Style

An organization has a prevailing attitude and a certain standard approach to doing things (Pettigrew 1979). This approach may also concern the way the organization deals with preparing and supporting its decisions. We distinguish a general analytical approach using quantitative data and formal analyses and a more heuristic/holistic approach. CRM systems center around data and analysis. We expect that these systems will fit best in organizations that have an analytical approach towards decision making and that if systems are being used by these kinds of organizations their impact will be the largest. We hypothesize:

H20: The presence of an Analytical Organizational Decision Style will be positively related to the Organizational Impact of CRM systems.

Market Characteristics

Finally, we expect two market characteristics to affect the Organizational Impact of CRM Systems.

Relative Importance of B-to-B Customers

The CRM approach is most likely to be effective in companies where individual customers are known and where records of these individual customers are kept. CRM would be a less feasible approach in the FMCG sector, where organizations typically have millions of (anonymous) customers. We think that organizations (mainly) operating in business-to-business markets can especially benefit from CRM systems and we, therefore, expect that as a firm has a large share of B-to-B customers (relative to the share of B-to-C customers) the impact of the CRM system will be larger. We hypothesize:

H21: The Relative Importance of B-to-B Customers will be positively related to the Organizational Impact of CRM systems.

Competition

Keeping customers and defending customer shares is especially difficult in highly competitive markets. We expect that particularly in these situations, the availability of CRM systems will be important. In such situations promptly responding to customer requests and designing effective marketing policies is critical and CRM systems will facilitate this. We hypothesize:

H22: The amount of Competition will be positively related to the Organizational Impact of CRM systems.

Method

Various approaches exist for the study of the success of information systems. Since we investigate many individual, organizational, and implementation variables we decided for a cross-sectional investigation of a large number of real-life systems. Examples of other cross-sectional study of information systems in marketing are those by Speier and Venkatesh (2002) who surveyed a large number of users of two different types of sales force systems and Wierenga and Ophuis (1997) who investigated the adoption of a large number of real life marketing decision support systems.

We collected data through surveying key informants within organizations that had adopted CRM systems. We approached companies in two samples. First, we used the European client list of a major supplier of CRM systems. The effective sample size was 804 companies. We received responses from 72 organizations from 19 countries. This means a response rate of 9%. The second sample was drawn from a database with the names of Dutch marketers that were member of a special interest group on the application of information technology in marketing. This database contained 750 names. We received responses of 75 organizations.

This means a response rate of 10%. Of these 75 responding organizations 35 had implemented a CRM system. Data about these 35 implementations were added to our database. We perform our analyses on the pooled data from the two samples (total n=107). Most characteristics of the CRM systems and organizations in the two samples were similar. The main difference was that the systems in the first sample were somewhat more expensive than those in the second sample and also implemented by larger organizations. Almost half of our informants (48.5%) was employed in a commercial function (marketing, sales, or a specific CRM department). The remaining informants were employed in general management functions or in IT/IS functions. The informants in our study played two different roles. First, they acted as users of the CRM systems (all of them were actual users) and gave their responses with respect to the individual impact of CRM systems. Second, they gave their judgments with respect to the organizational impact of the CRM system and the characteristics of the CRM system, the organization, the implementation process and of the market environment.

The implementation of the CRM systems we studied involved considerable investments. The average initial costs for software, hardware, consulting and training amounted to €3.052.384, while the median was €665.000. The annual average costs for operating and maintenance were €282.000. The median of this amount was €90.000 per year.

Measures

To measure the variables in our research model we used existing measurement scales where possible and developed new scales when this was not the case. To validate our measurement scales we performed principle component analyses to check for unidimensionality. Next, we conducted a confirmatory factor analysis per set of constructs to check for both the convergent and discriminant validity. Finally, we computed Cronbach α to assess the reliability of the constructs. Overall, our measures possessed good measurement properties.

After we had determined scale validity we computed the value for the construct by taking the mean of the separate item scores. Below we summarize the measurement of the various constructs. The exact wording of the items used in these scales can be found in the Appendix. In the Appendix we also present the mean construct scores and the values of Cronbach α .

Dependent Variables

Task Fit:

We measured *CRM System-Task Fit* as the extent to which users perceive the system to be helpful for the task they work on.

Objective measures of system success are difficult to achieve. Therefore, many MIS researchers have relied on user evaluations of systems as measures of MIS success (Goodhue 1995). We measured user evaluations of individual impact and organizational impact.

Individual Impact:

Perceived Usefulness is defined as the degree to which people believe using a particular system enhanced their job performance. To measure perceived usefulness we used the scale that was developed and validated by Davis (1989) and that captures the extent to which individuals feel that using the system improves their own job performance.

User Satisfaction is measured by assessing how a user feels about his or her system (Goodhue), that is, his or her affect toward the system.

Organizational Impact:

Market/ Customer Impact is extent to which the use of the system affected the responsiveness of the organization and thereby made the organization more successful with customers leading to improved customer satisfaction.

Financial Impact concerns the informants' perceptions of CRM system impact on "hard" financial metrics such as profitability and customer share.

Customer Efficiency Impact measures the extent to which the CRM system affect the

organization's efficiency in dealing with its customers.

Independent Variables

Individual User Characteristics

Job Domain (IT/ Management Background) is a dummy variable which indicates whether the informants were employed in a primarily Management or Commercial function (=1) or in an IT or IS function (=0). Of our informants 42% was employed in an IT/IS function and 58% in a management function.

Attitude towards Information Technology measures the extent to which our informants think that IT will improve the effectiveness/ productivity of doing business in general.

User Age was measured in years. We asked our informants to check the age category they were in. On average our informants were relatively young. The large majority (84%) of our informants was younger than 46 years with 42.1% of the informants being between 26 and 35 years of age.

User Experience is the amount of time the informants have been using the system measured in months. This experience ranged between 0 and 81 months with a mean value of 14.8 months.

CRM System Characteristics

System Sophistication is a composite score that is developed through determining whether the system contained certain functionalities next to a standard data base with customer data.

Examples of these functionalities are web clickstream analysis, customer segmentation procedures, customer lifetime value analysis and campaign response analysis. In total we checked for the presence of eight functionalities. The mean score was 3.26.

System Flexibility concerns the extent to which the CRM system was adaptable to changing user needs and requests.

Data Integration is a dummy variable measuring whether all customer data in the

organization are integrated in the CRM system. For the majority of the systems in our sample (76.8%) this was indeed the case.

System Integration is a dummy variable measuring whether the CRM system was integrated with other information systems in the organization. Systems were integrated in 74.7% of the cases in our sample.

Ease of Use is measured using the scale developed and validated by Davis (1989).

System Age is measured as the number of years the CRM system has been in use since its implementation. The average value for this variable was 1.6 years with 80% of the systems being less than two years old.

CRM System Implementation

Training and Support measures the extent to which individuals felt they were able to use the systems effectively because of the training and support they received.

Top Management Support measures the extent to which management of the organization stimulates, supports and facilitates the use of the CRM system.

Role of Consultants in the implementation of the CRM systems was measured using one single item.

Project Champion in the organization refers to the presence of a person who championed the idea of the implementation and use of a CRM system in the organization and lobbied for its support. 79 of the organizations in our sample (75%) indicated that a champion was present in their organization.

CRM System Use:

Strategic Use was measured using a 100-point constant-sum scale on which the informants assessed whether their system was especially being used for strategic vs. operational use. The mean score for strategic use was 45 points.

Intra-Organizational Adoption Rate of the systems. This was measured as the percentage of

the total number of potential users within an organization that is actually using the system.

The average intra-organizational adoption rate across the 107 implementations was 44%.

Organizational Characteristics

Rewards for Customer-Centric Behavior measures the extent to which customer-centric behavior of employees is required and rewarded.

Interdepartmental Coordination measures the extent to which different departments cooperate in serving customers.

Customer Orientation measures the extent to which the organization monitors and understands the characteristics and needs of individual customers.

Analytical Decision Making Style measures the extent to which the organization favors decisions to be made in a systematical or analytical manner where quantitative data and statistical analyses are important.

Market Characteristics

Relative Importance of B-to-B customers measures the percentage of the turnover realized by the organization in business-to-business markets. The mean percentage across the organizations in our sample was 70.7%. 42.4 of the organization even realized their complete turnover in B-to-B markets.

Competition is the intensity of the competition in the markets where the organizations are operating.

Common-Method Variance

In cross-sectional studies in which all data are collected from a single (common) source association measures such as correlation - and regression coefficients are vulnerable to inflation because of the presence of common-method variance(Lindell and Whitney 2001).

The scores of these single informants may not only reflect the true scores for variables of interest but also a systematic error component that is present across variables. To control for

common-method variance we applied a statistical control. We included a “marker” variable in our survey (Lindell and Whitney 2001; Podsakoff, MacKenzie, Lee, and Podsakoff 2003). This variable measured the general feeling towards using information technology (see Appendix for the items). Next, we corrected all the perceptual constructs from our research model that were measured using 7-point Likert scales (these are the constructs listed in Appendix) for this overall opinion about information systems. We did this through performing regression analyses between our original construct scores (as the dependent variables) and our marker variable (as the independent variable). Subsequently, the resulting standardized residuals were used as input for analyzing the relationships in our research model. This means that the associations we report are the ones for the specific CRM systems in our sample and are no longer inflated due to correlation between systematic error components because of common method variance and because of a more general feeling towards information systems. Ideally, the marker variable should be unrelated to the constructs in the research model so that any covariation found between the marker variable and the constructs in our research model will be due to common method biases (Lindell and Whitney 2001). This way the relationships between the “corrected” constructs will be most close to the “true” relationships. Because of the content of our marker construct we cannot rule out some substantive covariation between the marker variable and the constructs in our research model beforehand. Since, in the process, we also correct our constructs for this substantive covariation the reported associations between the corrected constructs may be somewhat deflated. In this sense our estimates of the relationships in our research model will be conservative.

Results

We will now discuss the results of our study. Equations 1-6 present the framework we applied for our analyses. The results of the analyses are presented in Table 1-3.

$$\text{Task Fit} = \alpha_1 + \beta_1 \mathbf{x}_{TF} + \varepsilon_1 \quad (1)$$

$$\text{Perceived Usefulness} = \alpha_{2a} + \beta_{2a} \mathbf{x}_{II} + \varepsilon_{2a} \quad (2a)$$

$$\text{Perceived Usefulness} = \alpha_{2b} + \beta_{2TF} \text{Task Fit} + \beta_{2b} \mathbf{x}_{II} + \varepsilon_{2b} \quad (2b)$$

$$\text{User Satisfaction} = \alpha_{3a} + \beta_{3a} \mathbf{x}_{II} + \varepsilon_{3a} \quad (3a)$$

$$\text{User Satisfaction} = \alpha_{3b} + \beta_{3TF} \text{Task Fit} + \beta_{3b} \mathbf{x}_{II} + \varepsilon_{3b} \quad (3b)$$

$$\text{Market/ Customer Impact} = \alpha_{4a} + \beta_{4a} \mathbf{x}_{OI} + \varepsilon_{4a} \quad (4a)$$

$$\text{Market/ Customer Impact} = \alpha_{4b} + \beta_{4II} \text{Individual Impact} + \beta_{4b} \mathbf{x}_{OI} + \varepsilon_{4b} \quad (4b)$$

$$\text{Financial Impact} = \alpha_{5a} + \beta_{5a} \mathbf{x}_{OI} + \varepsilon_{5a} \quad (5a)$$

$$\text{Financial Impact} = \alpha_{5b} + \beta_{5II} \text{Individual Impact} + \beta_{5b} \mathbf{x}_{OI} + \varepsilon_{5b} \quad (5b)$$

$$\text{Customer/ Marketing Efficiency} = \alpha_{6a} + \beta_{6a} \mathbf{x}_{OI} + \varepsilon_{6a} \quad (6a)$$

$$\text{Customer/ Marketing Efficiency} = \alpha_{6b} + \beta_{6II} \text{Individual Impact} + \beta_{6b} \mathbf{x}_{OI} + \varepsilon_{6b} \quad (6b)$$

Where: $\alpha_1 \dots \alpha_{6b}$ are constants; \mathbf{x}_{TF} , \mathbf{x}_{II} , \mathbf{x}_{OI} are the antecedents of Task Fit, the Individual Impact variables, and the Organizational Impact variables respectively; and $\beta_1 \dots \beta_{6b}$ are the estimates of the relationships in our research model. As can be seen we estimate the effects of the various antecedents on the Individual Impact variables with and without including Task Fit as an independent variable. This way we can determine to what extent the effects of the antecedents are mediated by Task Fit. Similarly we estimate the effects of the various antecedents on the Organization Impact variables with and without including the Individual Impact variables as independent variables. This way we can determine to what extent the effects of the antecedents are mediated by the Individual Impact variables. Our overall model was fully recursive and included no backward linkages among variables. To estimate the various parameters we conducted a series of OLS regressions. This is appropriate since most of the error terms in the various equations were uncorrelated. Some correlation was present between the error terms of the organizational impact variables (Eq. 4 – Eq. 6) suggesting

estimation by GLS. However, these equations have identical explanatory variables leading to identical results for OLS and GLS (Greene 1997).

- TABLE 1-3 ABOUT HERE -

Task Fit:

The CRM systems in our sample showed a fit with the tasks they were supposed to support, which was slightly above average (mean value of 4.62 on a 7-point scale). The results in Table 1 show that the CRM System Characteristics are the most important antecedents of Task Fit. Our expectations (H6a and H9a), that System Flexibility ($\beta=.219$, $p=.016$) and (especially) Ease of Use ($\beta=.465$, $p=.000$) are positively related to Task Fit are confirmed. The expected negative effect of System Age (H10a) is also significant ($\beta=-.194$, $p=.036$): older systems tend to fit worse with the task. Furthermore, we find the tendency for users to perceive a higher Task Fit if Top Management Supports system implementation and use (H12a) ($\beta=.132$, $p=.053$) and when the Role of Consultants has been larger during the implementation of the CRM system (H13a) ($\beta=.114$, $p=.096$). Most of the other hypothesized relationships with Task Fit were not significant. It is interesting that none of the individual User Characteristics is related to Task Fit. Apparently it is not Job Domain, Attitude towards IT or Age that determine Task Fit. Unexpectedly, we did find a negative relationship of Integration with other Information Systems ($\beta=-.252$, $p=.003$) with Task Fit. So CRM systems that are stand-alone systems have a better Task Fit. This probably due to the fact that these systems were developed for supporting specific Customer Relationship Management tasks. The broader purpose of more integrated information systems apparently goes at the cost of depth regarding CRM functionalities.

Individual Impact

The results of the regression analyses for the Individual Impact variables are presented in Table 2.

Perceived Usefulness

On average, the CRM systems in our sample are perceived as relatively useful with a mean score of 5.26. Task Fit is strongly related to Perceived Usefulness ($\beta=.727$, $p=.000$).

Including Task Fit in the regression increases the adj. R^2 from .254 (Eq. 2a) to .565 (Eq. 2b).

Task Fit fully mediates the influence of Integration with other Information Systems and Ease of Use on Perceived Usefulness. Interestingly, the relationship with Perceived Usefulness of another CRM System Characteristic, System Sophistication, follows a different route. System Sophistication (H5b) is directly and positively related to Perceived Usefulness ($\beta=.149$, $p=.023$), and its effect is only slightly mediated through Task Fit. So systems with more functionalities are perceived as more useful, even if these functionalities have no direct benefits for the task of the user. System Flexibility is not directly related to Perceived Usefulness (H6b). We do find an indication for a relationship between Job Domain (H1b) and Perceived Usefulness. Users working in a commercial or management function perceive the CRM system as more useful for their work than users employed in an IT/IS function ($\beta=.107$, $p=.068$). Different from our expectations, we do not find relationships with the users' Attitude towards IT (H2b), and of the User Age (H3b). Surprisingly, Use Experience shows a negative relationship (H4b) with Perceived Usefulness ($\beta=-.183$, $p=.021$). Users, who have used their CRM system for a longer period of time, perceive the system as less useful. An explanation for this finding is that the CRM system does not live up to the initial expectations of the users, causing the perceived usefulness of the CRM system to decrease over time. Speier and Venkatesh (2002) found a similar phenomenon for a newly introduced sales force automation technology, where the positive perceptions that existed immediately after the training, changed into lower ratings six month later. Recently, Kim and Malhotra (2005) also found evidence for the fact that users sequentially update their evaluations of information systems with target system experience.

Different from what we expected (H13b) we find that if consultants play an important role in the implementation process, users tend to perceive the CRM system as less useful ($\beta = -.110$, $p = .072$). This is despite the fact that the presence of consultants was associated with better Task Fit. The presence of a project champion tends to be associated with more useful systems (H14b) ($\beta = .096$, $p = .096$). However, we do find the expected positive relationship of Rewards for Customer-Centric Behavior (H17b) ($\beta = .174$, $p = .008$). In companies where customer-centric behavior of employees is rewarded, the CRM systems are perceived as more useful.

User Satisfaction

On average in our sample users are relatively satisfied with their CRM systems. The mean satisfaction score is 5.15. There are clear differences between the variables related to User Satisfaction and those related to Perceived Usefulness. Task Fit is also strongly related to User Satisfaction ($\beta = .485$, $p = .000$). However, its contribution to the adj. R^2 is smaller for User Satisfaction than for Perceived Usefulness (i.e., including Task Fit in the regression increases adj. R^2 from .497 to .634). A possible explanation for this might lie in the fact that the Perceived Usefulness concept refers to the usefulness of the system for doing well on the specific job/task of the user, whereas User Satisfaction is a broader concept referring to more than only a user's particular task. Also different from the results for Perceived Usefulness, the two implementation variables, Training and Support (H11b) ($\beta = .171$, $p = .008$) and Top Management Support (H12b) ($\beta = .170$, $p = .005$) show a significant positive relationship with User Satisfaction. This shows that training and support by top management is related to the overall satisfaction with the CRM system rather than to its usefulness for the specific job/task of the user. We did not find significant relationships of User Satisfaction with User Experience (H4b) and Rewards for Customer-Centric Behavior (H17b). Users in our sample are somewhat less satisfied with systems that are used for strategic purposes than with systems that are used for operational purposes ($\beta = -.090$, $p = .082$). Finally, it is interesting,

that for User Satisfaction the effect of Ease of Use is not completely mediated by Task Fit, but that a direct significant effect remains (H9b) ($\beta=.288$ $p=.001$). This shows that the effects of Ease of Use on User Satisfaction go beyond the benefits of the CRM system for the immediate job/task of the user.

Organizational Impact:

The results in Table 3 show that the Individual Impact variables are significantly related to the Organizational Impact variables. User Satisfaction with the CRM system shows a significant positive relationship to the Market/ Customer Impact of CRM systems ($\beta=.294$, $p=.005$), with the Financial Impact of CRM systems ($\beta=.170$, $p=.083$) while it is also strongly related to the Customer/ Marketing Efficiency of CRM systems ($\beta=.463$, $p=.000$). Perceived Usefulness ($\beta=.188$, $p=.028$) is also positively related to the Market/ Customer Impact of the CRM system and to the Financial Impact of the CRM system ($\beta=.173$, $p=.053$) User Satisfaction with the CRM system shows no significant relationship with the impact of CRM systems on the Efficiency of dealing with customers.

Market/ Customer Impact of CRM Systems

Customer/Market Impact of the CRM system refers to its effects on customer retention, customer satisfaction, and cross selling. The systems in our sample have an average score of 4.14, which is just above the midpoint of the 7-point scale.

The positive relationships of System Flexibility (H6c) and Rewards for Customer-Centric Behavior (H17c) are to a large extent mediated by the Individual Impact variables. Top Management Support shows a positive relationship with Customer/Market Impact (H12c), which remains significant ($\beta=.213$, $p=.004$), after the effects of the Individual Impact variables are taken into account. Unexpectedly, there is a significant *positive* effect of System Age on Customer/Market Impact ($\beta=.143$, $p=.044$). This indicates that it takes time to realize effects of CRM systems such as higher customer satisfaction and retention. None of the

hypothesized effects of the CRM system Use Characteristics, Organizational Characteristics (except for Rewards for Customer-Centric Behavior) and Market Characteristics show up.

Financial Impact of CRM Systems

The average Financial Impact of the CRM systems in our sample is relatively low: a mean score of 3.88 on a 7-point scale. We find strong relationships of Financial Impact with Rewards for Customer-Centric Behavior (H17c) ($\beta=.244$, $p=.014$) and with Analytical Decision Style (H20) ($\beta=.234$, $p=.008$). These effects persist with the Individual Impact variables in the equation (5b). This means that in companies that give incentives to employees in order to stimulate customer-centric behavior, employees not only appreciate CRM systems for their own job, but these systems also contribute to the bottom-line financial results of the company. The Financial Impact of a CRM system is also greater for more Sophisticated Systems (H5c) ($\beta=.159$, $p=.035$) and it tends to be greater when Top Management Support (H12c) is stronger ($\beta=.113$, $p=.098$) and when consultants have played a more important role when the CRM system was installed (H13c) ($\beta=.122$, $p=.079$). However, the latter effects are substantially mediated by the Individual Impact variables. We also find a positive relationship between Data Integration (H7c) and the Financial Impact of CRM systems. Again for Financial Impact, no significant relationships were found with CRM system Use Characteristics and with Market Characteristics.

Customer/ Marketing Efficiency Impact of CRM Systems

The third Organizational Impact variable refers to the extent that the CRM system helps to respond more quickly to customers and to save time in the interactions with customers. The CRM systems in our sample were relatively effective on this measure with an average score of 4.91 on the 7-point scale.

We find a negative relationship between Strategic Use of the CRM system (H15c) ($\beta=-.213$, $p=.005$), implying that CRM systems that were being used for strategic rather than

operational purposes are not particularly effective for improving the efficiency of day-to-day interactions with customers. The extent of Interdepartmental Coordination (H19) ($\beta=.250$, $p=.005$) is positively related to Customer/ Marketing Efficiency. The relationship of Training and Support with Customer Efficiency is mediated through User Satisfaction. Finally we find a relationship of Data Integration (H7c) ($\beta=.156$, $p=.043$), indicating that integrating all customer information in the CRM system contributes to the efficient interaction with customers. Finally, the results show that CRM systems improve the Customer/ Marketing Efficiency especially in B-to-B markets (H21) ($\beta=.144$, $p=.043$).

Discussion

When are CRM systems successful?

In this study we have investigated the impact of CRM systems at both the level of the individual user and at the level of the organization in which the system is being used. Our results show that impact at both levels are strongly related. The nature of our data (cross-sectional) does not permit us to make strong statements about the causal order between individual – and organizational level impact variables. However, since these variables are so strongly related we think that it is safe to state that in order to be effective for an organization *individual* employees should be able to recognize the value of CRM systems. The results of our study show that for this the information system dimension of CRM systems is highly important. First of all, CRM System Characteristics are strongly related to CRM system-Task Fit. Especially systems that are Easy-to-Use, Flexible, and that are not Integrated with other Information Systems (i.e., these are more specialized stand-alone CRM systems) fit with well with the tasks CRM system users have to perform. These system characteristics are important because Task Fit is strongly related to both the Perceived Usefulness of the CRM system and the User's Satisfaction with such systems. The latter finding confirms Goodhue and Thompson's (1995) theory regarding the role and importance of task fit. Furthermore, System

Sophistication is directly related to both the Perceived Usefulness of and the User Satisfaction with the CRM system. This makes that CRM System Characteristics are strongly related to the extent that individuals within the organization value CRM systems. Since the systems that are being evaluated positively by individuals are also the ones that have most impact at the organizational level selecting the “right” CRM system is a critical task. It is interesting to observe that the “right” CRM system is different from the most expensive CRM system. We find no positive relationship between the costs of a CRM system implementation and its impact. In the study by Reinartz et al. (2004) relationship between the size of the investments in CRM technology and its effects on company performance was even found to be negative.

Next to CRM system Characteristics, the Implementation Characteristics Training and Support and Top Management Support are related to User Satisfaction and Organizational Impact. Furthermore, the organizational setting in which the CRM system is being implemented and used is important. Organizations in which customer-centric behavior is valued and rewarded are appropriate environments for successful CRM systems. This finding provides empirical support for the need to “align” an organization toward building customer relationships (Day 2003; Reinartz et al. 2004) if the organization wants to benefit from its CRM system investments.

Overall, we find that Individual User Characteristics do not play an important role as far as the impact of CRM systems is concerned. An explanation for this might be that in the marketing domain, working with IT-based tools has become so common that factors such as a-priori attitude toward IT, and age do not play a role any longer. It has been found before in a marketing context that individual user factors are less important than system implementation variables (Wierenga and Ophuis 1997). From a management perspective this is an advantage, because it means that CRM implementation strategies can be fairly general,

and there is no need to adjust these to (groups) of individual users.

The Role of Consultants is smaller than expected. Our results that show that consultants may be effective in order to make CRM systems fit better tasks and to improve the Financial Impact of CRM systems. However, individual users do not seem to value the efforts of consultants. This is remarkable, given the fact that organizations heavily use consultants for their CRM systems. In the majority of the cases in our sample (75%), there was a person in the company who championed the idea of the CRM system, lobbied for support, and oversaw its development and deployment. A champion is generally considered to be a factor that increases the adoption and success of information systems in organizations. However, this is not so much the case for the systems in our sample. A possible explanation is that decisions about CRM systems are typically taken by higher-level management in organizations (see the importance of Top Management Support) and that for most employees the use of the CRM system is simply mandatory. In such a situation there may not be an important role to play for a systems champion.

Intra-organizational adoption rate and customer orientation appear not to matter. However, a post-hoc analysis shows that the adoption rate is significant and positively correlation with interdepartmental coordination ($r=0.481$). This suggests that in organizations where various departments cooperate intensively, more people use the CRM system (i.e., a higher adoption rate). In such organizations CRM systems improve the efficiency of interacting with customers (regression 6b). Another post-hoc analysis shows that companies that are more customer-oriented more often reward their employees for customer-centric behavior ($r=0.583$), show more interdepartmental coordination ($r=0.355$), and give more CRM system training ($r=0.408$). Evidently, customer-orientation is related to CRM system impact, but in the analysis its influence becomes manifest through other variables.

Market characteristics do not really seem to matter. The companies in our sample are

predominantly operating in B-to-B markets (average % of B-to-B customers is 71%), As far as the impact of CRM system is concerned, we did not observe many differences (except for efficiency effects of CRM systems). This is consistent with Day's (2003) finding that the factors that drive CRM system success are the same for companies selling to businesses as to consumers. Reinartz et al. (2004) also conclude that their findings about the influence of CRM processes on economic performance appear to be consistent across industries. This is fortunate, because it means that we are starting to obtain insights in CRM of a fundamental nature, i.e., that go beyond the differences between industries. Also, we did not find any effects of the level of competition in the market. Apparently, CRM as a primarily customer-oriented approach has the same effects in markets with strong and with weak competition. This again testifies to the generalizability of the CRM insights obtained.

Managerial Implications

Overall, users were positive about the impact of systems with informants seeming to be slightly more positive about the effects of CRM systems at the individual level than at the organizational level. Our findings can be translated into several recommendations for organizations that (consider to) implement and use CRM systems.

First, organizations should make sure that the CRM system is beneficial for the individual user. If this is the case, the organization will more likely be able to realize advantages at the organizational level. Task Fit is a key factor for this. There is a rich supply of different CRM systems nowadays, and it seems worthwhile to have prospective users do test sessions with different systems, before embarking on purchasing a specific system. We do not find the price of a CRM system to be a good indicator for its impact. Task Fit is primarily determined by CRM System Characteristics. A wrong initial choice of a CRM system, resulting in a low task fit, cannot be compensated by additional training and support or by involving consultants. Ease of Use and Flexibility should get special attention when a specific CRM

system is selected.

Second, the intra-organizational environment matters. CRM systems will not do well in any organization. CRM systems have a much greater impact in companies with an evident customer-orientation, especially when reward systems are in place for customer-centric behavior. CRM systems also have a greater impact in organizations with a more analytical decision style. A company considering to make a major investment in a CRM system, would do well by first examining if its internal climate is sufficiently conducive to get the expected results from a CRM system. In some instances, it might be better to first change the organizational setting before purchasing a CRM system.

Third, top management plays a crucial role. It should demonstrate its unequivocal support for the use of CRM systems. The implementation of an incentive structure where customer-centric behavior is being rewarded also is a critical responsibility of top management.

Fourth, the acceptance of the CRM system in the company should be closely monitored over time. The perceptions of the users about the usefulness of the CRM system seem to deteriorate over time. This may be due to high initial expectations. At the same time, the impact of the CRM system for the organization (e.g., better customer retention and satisfaction) becomes visible only some time after the implementation of the CRM system.

So, there is a need for active mood management, in order to prevent the sentiments of the individual user to go down before the success of the CRM system at the organizational level has the opportunity to manifest itself.

Finally, organizations should invest in relatively sophisticated CRM systems, i.e., systems with many different functionalities. Users prefer that, and it also has a positive effect at the organizational level. Caution is recommended for integrating the CRM system with (too) many other organizational information systems (e.g., those for production, finance).

“Broader” systems tend to fit less well with the specific tasks in the domains of marketing

and customer interaction. On the other hand, having all the different data of individual customers (e.g., demographics, transactions, profitability) integrated in one system, is a good thing.

Limitation

This study is the first that investigates the characteristics of a large number (n=107) of different CRM system implementations. We were able to study this large number through our close cooperation with CRM vendors. This led to a large cross-sectional database in which all information was obtained through one single informant per CRM implementation. We acknowledge that this might potentially result in an inflation of the effect sizes in our study. We tried to minimize this risk by applying statistical controls to control for common method variance. Ideally we would have liked to have a different (objective) source for our (organizational) dependent variables. However, since the CRM system vendor did not provide us with the names of the organizations in our sample we were not able to validate our findings with objective performance data. We take comfort in the fact that in the CRM study by Reinartz et al. (2004) the relationships for objective data were actually at least as strong as for subjective measures.

Appendix: Measurement Scales

CRM System Fit with Task (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. The system supports most aspects of my task
2. The system provides the precise information I need to carry out my work
3. The system's functions fit well with my job functions
4. The system provides exactly those functions I need
5. The system provides sufficient information

$\alpha = .92$, mean = 4.62 (1.30)

Perceived Usefulness of the CRM system (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. The system enhances my job effectiveness
2. Using the system makes my job easier
3. Using the system increases my productivity
4. I find the system useful
5. Using the system improves my job performance

$\alpha = .95$, mean = 5.26 (1.27)

Satisfaction with the CRM system (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. All in all, I am satisfied with the CRM system

Mean = 5.15 (1.44)

Market/ Customer Impact (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. Our market share has increased since we implemented the CRM system
2. The CRM system has enabled us to increase cross-selling product/ services to our customers
3. Customer satisfaction has increased because of the use of the CRM system
4. Our customer retention rate has increased as result of using the CRM system

$\alpha = .85$, mean = 4.14 (1.14)

Organizational Financial Impact (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. Our revenues per customer have increased due to the use of our CRM system
2. Since the implementation of the system the number of profitable customers has increased
3. Our profit margins have improved due to usage of our CRM system

$\alpha = .94$, mean = 3.88 (1.26)

Organizational Customer/ Market Efficiency (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. The CRM system enables us to respond quickly to our customers' requests
2. The CRM system has saved a lot of time in getting our work done

$\alpha = .81$, mean = 4.91 (1.29)

Attitude towards IT in General (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. Using IT is a requirement for doing business nowadays
2. Using IT enhances my competence
3. Using IT improves my job productivity

$\alpha = .55$, mean = 6.06 (0.71)

CRM System Flexibility (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. Our CRM system is flexible in responding to my changing needs for data
2. It is easy to change the selection and format of data made available by our CRM system

$\alpha = .89$, mean = 4.21 (1.64)

CRM System Ease of Use (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. It is easy to learn how to use our system
2. I find it easy to get the information I need from our system
3. Interacting with our system does not require a lot of mental effort

4. It is easy to become skillful at using our system
 5. I find our system easy to use
- $\alpha = .91$, mean = 5.09 (1.21)

Training and Support (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. There was enough training on how to use our CRM system
 2. I have gotten the training I needed to be able to use our CRM system effectively
 3. I am happy about the training I received with respect to our CRM system
 4. I received the help I needed in accessing and using our CRM system
 5. It was easy to get assistance when I was having difficulties in using our CRM system
- $\alpha = .92$, mean = 4.77 (1.36)

Top Management Support (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. Our top management strongly supported the implementation of our CRM system
 2. CRM is regarded as high priority by our top management
 3. Our top management recognizes the strategic potential of CRM systems
 4. Our top management recognizes that our CRM system is critical to our organization's success
 5. Our top management supports the use of our CRM system in our organization's operations
 6. Our top management was willing to take responsibility for the implementation of the CRM system.
 7. Our top management provided adequate resources for the deployment and operation of our CRM system
- $\alpha = .93$, mean = 5.11 (1.25)

Importance of Consultants (not important at all 1-2-3-4-5-6-7 very important)

1. How important was the role that consultants played in the implementation of your CRM system
- Mean = 5.28 (1.79)

Rewards for Customer-Centric Behavior (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. We require every employee to take whatever action is appropriate to ensure the ultimate satisfaction of our customers
 2. We have made customer-centric behavior a significant part of performance evaluation criteria
 3. Employees get rewards for customer-centric behavior
- $\alpha = .84$, mean = 4.36 (1.44)

Interdepartmental Coordination (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. All of our departments work together in serving our customers
 2. Our departments are responsive to each other's needs and requests
 3. Our managers from the various departments regularly visit our customers
 4. We share information about our customer experiences across all departments
- $\alpha = .78$, mean = 4.43 (1.10)

Customer Orientation (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. We have detailed customer knowledge of each customer
2. We constantly monitor our level of commitment and orientation to serving customer needs
3. Our business objectives are primarily driven by increasing customer satisfaction
4. Our strategy for competitive advantage is based on our understanding of customer needs
5. Our business strategies are driven by our beliefs about how we can create greater value for our customers
6. We measure customer satisfaction systematically and frequently

$\alpha = .85$, mean = 4.86 (1.10)

Analytical Organizational Decision Making Style (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. Decision making in our organization is a rational process
2. Decision makers in our organization rely on hard facts and formal analytic methods
3. Decision makers in our organization evaluate information systematically
4. Quantitative analyses are highly valued in our organization
5. Decision makers in our organization favors formal and careful data analysis instead of intuitive processes

$\alpha = .87$, mean = 4.52 (1.04)

Competition (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. Competition in our industry is cut-throat
2. Anything that one competitor can offer, the others will readily match
3. Price competition is a hallmark of our industry
4. One hears of new competitive moves very frequently

$\alpha = .77$, mean = 4.92 (1.05)

General Feeling towards using Information Technology (strongly disagree 1-2-3-4-5-6-7 strongly agree)

1. I like working with information technology
2. I consider information technology as effective for decision making
3. Information technology provides an attractive working environment

$\alpha = .70$, mean = 5.83 (.79)

Table 1
Results of Regression Analyses for CRM System Task Fit,
Standardized Regression Coefficients (one-tailed significances)

	Fit with Task
	(1)
<u>User Characteristics:</u>	
Job Domain (Management/ IT Background)	-.016 (.424)
Attitude towards IT in general	.019 (.405)
Age	.082 (.152)
Experience in using CRM system	.086 (.204)
<u>CRM System Characteristics:</u>	
System Sophistication	.098 (.127)
System Flexibility	.219 (.016)
Data Integration	.019 (.421)
Integration with other Information Systems	-.252 (.003)
Ease of Use	.465 (.000)
System Age	-.194 (.036)
<u>CRM System Implementation:</u>	
Training and Support	-.052 (.279)
Top Management Support	.132 (.053)
Role of Consultants	.114 (.096)
Project Champion	-.029 (.367)
<u>CRM System Use Characteristics:</u>	
Strategic Use	.087 (.142)
<u>Organizational Characteristics:</u>	
Rewards for Customer-Centric Behavior	.078 (.172)
Adj. R ²	.402
F (sig.)	5.461 (.000)

Table 2
Results of Regression Analyses for Individual Impact Variables, Standardized Regression Coefficients (one-tailed significances)

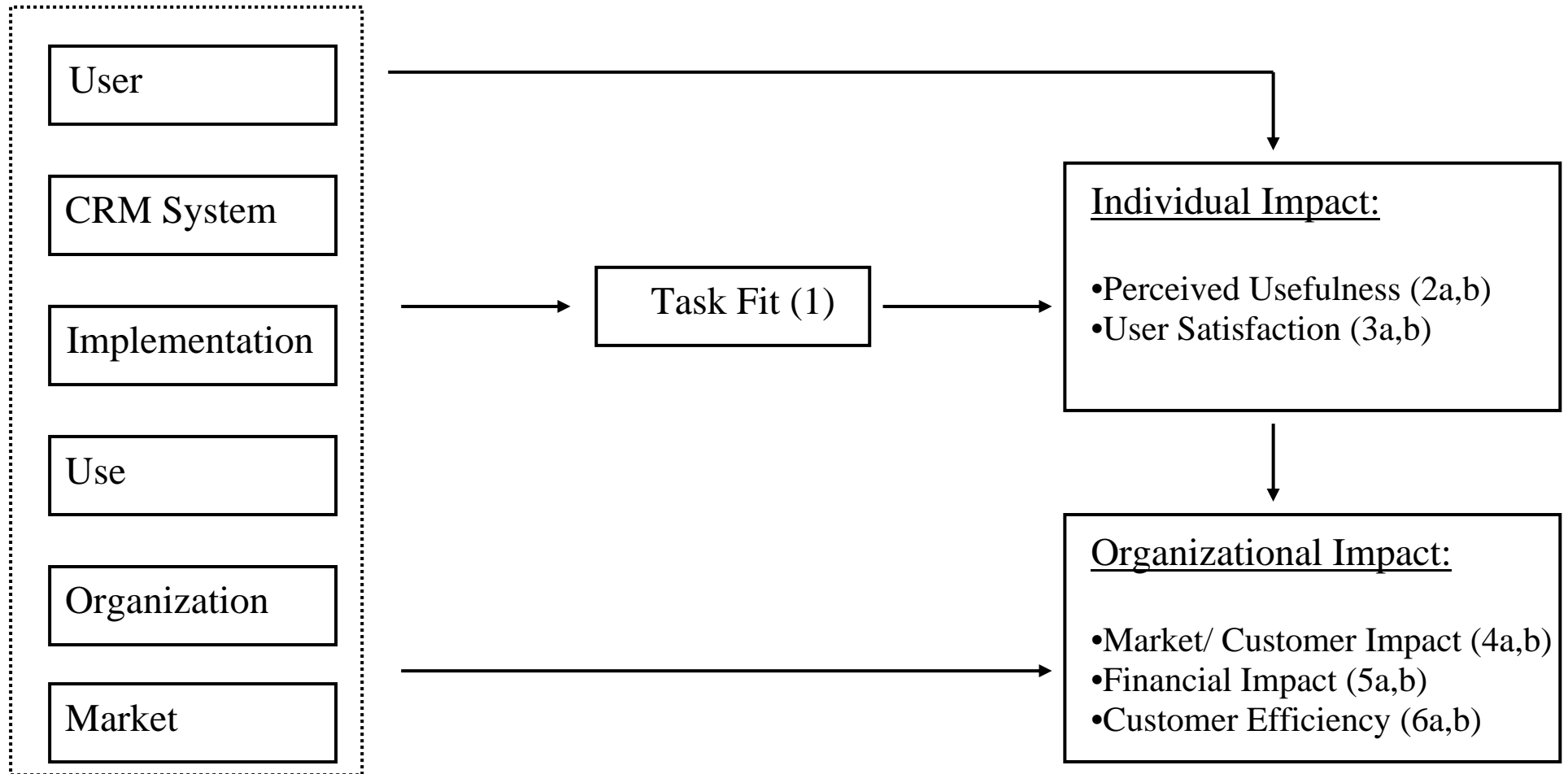
	Perceived Usefulness		User Satisfaction	
	(2a)	(2b)	(3a)	(3b)
<u>Fit</u>				
Task Fit		.727 (.000)		.485 (.000)
<u>User Characteristics:</u>				
Job Domain (Management/ IT Background)	.096 (.154)	.107 (.068)	.019 (.404)	.026 (.343)
Attitude towards IT in general	-.048 (.298)	-.062 (.184)	.002 (.292)	-.008 (.451)
Age	.066 (.231)	.006 (.466)	.023 (.379)	-.017 (.391)
Experience in using CRM system	-.121 (.149)	-.183 (.021)	.072 (.224)	.031 (.354)
<u>CRM System Characteristics:</u>				
System Sophistication	.221 (.012)	.149 (.023)	.247 (.001)	.200 (.002)
System Flexibility	.100 (.186)	-.059 (.251)	.025 (.391)	-.081 (.159)
Data Integration	.025 (.407)	.011 (.446)	-.027 (.379)	-.036 (.627)
Integration with other Information Systems	-.244 (.009)	-.061 (.225)	-.049 (.276)	.073 (.161)
Ease of Use	.372 (.001)	.034 (.364)	.514 (.000)	.288 (.001)
System Age	-.160 (.091)	-.019 (.418)	-.156 (.057)	-.062 (.233)
<u>CRM System Implementation:</u>				
Training and Support	-.068 (.246)	-.030 (.344)	.146 (.037)	.171 (.008)
Top Management Support	.166 (.034)	.070 (.158)	.234 (.001)	.170 (.005)
Role of Consultants	-.027 (.390)	-.110 (.072)	.100 (.105)	.045 (.256)
Project Champion	.075 (.218)	.096 (.096)	.034 (.331)	.048 (.236)
<u>CRM System Use Characteristics</u>				
Strategic Use	.046 (.307)	-.018 (.401)	-.048 (.262)	-.090 (.082)
<u>Organizational Characteristics:</u>				
Rewards for Customer-Centric Behavior	.231 (.007)	.174 (.008)	.032 (.338)	-.006 (.462)
Adj. R ²	.254	.565	.497	.634
F (sig.)	3.251 (.000)	9.084 (.000)	7.552 (.000)	11.779 (.000)

Table 3

Results of Regression Analyses for Organizational Impact Variables, Standardized Regression Coefficients (one-tailed significances)

	Market/Customer Impact		Financial Impact		Customer/ Marketing Efficiency	
	(4a)	(4b)	(5a)	(5b)	(6a)	(6b)
<u>Individual Impact:</u>						
Perceived Usefulness		.188 (.028)		.173 (.053)		-.004 (.485)
User Satisfaction		.294 (.005)		.170 (.083)		.463 (.000)
<u>CRM System Characteristics:</u>						
System Sophistication	.087 (.156)	.014 (.427)	.213 (.009)	.159 (.035)	-.037 (.340)	-.095 (.125)
System Flexibility	.251 (.005)	.138 (.061)	.060 (.271)	-.019 (.425)	.132 (.093)	.015 (.438)
Data Integration	.049 (.306)	.078 (.184)	.112 (.129)	.132 (.083)	.125 (.106)	.156 (.043)
Integration with other Information Systems	.031 (.375)	.081 (.183)	-.030 (.382)	.014 (.442)	-.047 (.321)	-.038 (.342)
System Age	.079 (.193)	.143 (.044)	-.062 (.252)	-.013 (.444)	.021 (.413)	.066 (.224)
<u>CRM System Implementation:</u>						
Training and Support	-.012 (.447)	-.103 (.128)	.055 (.282)	.003 (.488)	.261 (.004)	.119 (.104)
Top Management Support	.301 (.001)	.213 (.004)	.171 (.026)	.113 (.098)	.144 (.053)	.041 (.309)
Role of Consultants	.111 (.096)	.042 (.395)	.165 (.030)	.122 (.079)	.087 (.161)	-.007 (.415)
Project Champion	.005 (.477)	-.043 (.398)	-.044 (.316)	-.083 (.178)	.058 (.269)	.030 (.362)
<u>CRM System Use:</u>						
Strategic Use	.041 (.315)	.085 (.139)	-.092 (.146)	-.067 (.217)	-.281 (.001)	-.213 (.005)
Intra-Organizational Adoption	-.081 (.196)	-.075 (.187)	.034 (.361)	.040 (.332)	-.071 (.234)	-.075 (.197)
<u>Organizational Characteristics:</u>						
Rewards for Customer-Centric Behavior	.219 (.024)	.130 (.099)	.309 (.004)	.244 (.015)	.090 (.115)	.014 (.448)
Interdepartmental Coordination	.078 (.216)	.057 (.263)	.117 (.127)	.108 (.138)	.298 (.003)	.250 (.005)
Customer Orientation	.090 (.229)	.137 (.116)	-.089 (.239)	-.069 (.290)	-.063 (.308)	.048 (.343)
Analytical Decision Style	.125 (.101)	.095 (.139)	.254 (.007)	.234 (.008)	.046 (.326)	.011 (.454)
<u>Market Characteristics:</u>						
Relative Importance of B-to-B Customers	.001 (.494)	.030 (.352)	-.080 (.188)	-.063 (.234)	.097 (.144)	.144 (.043)
Competition	-.072 (.196)	-.060 (.213)	-.007 (.466)	.001 (.497)	-.093 (.145)	-.081 (.152)
Adj. R ²	.386	.503	.454	.403	.336	.460
F (sig.)	4.915 (.000)	6.646 (.000)	4.356 (.000)	4.770 (.000)	4.155 (.000)	5.743 (.000)

Figure 1: Research Model



References

- Abrahamson, Eric and Lori Rosenkopf (1997), "Social network effects on the extent of innovation diffusion: A computer simulation," *Organization Science*, 8 (3), 289-309.
- Adams, Barbara, Eta S Berner, and Joni Rouse Wyatt (2004), "Applying Strategies to Overcome User Resistance in a Group of Clinical Managers to a Business Software Application: A Case Study," *Journal of Organizational and End User Computing*, 16 (4), 55-64.
- Alavi, Maryam and Erich A. Joachimsthaler (1992), "Revisiting DSS Implementation Research: A Meta-Analysis of the Literature and Suggestions for Researchers," *MIS Quarterly*, 16 (1), 95-116.
- Bailey, James E. and Sammy W. Pearson (1983), "Development of a Tool for Measuring and Analyzing Computer User Satisfaction," *Management Science*, 29 (5), 530-45.
- Barki, Henri and Sid L. Huff (1990), "Implementing Decision Support Systems: Correlates of User Satisfaction and System Usage," *INFOR*, 28 (2), 89-101.
- Blake, Ives, Margrethe H Olson, and Jack J Baroudi (1983), "The Measurement of User Satisfaction," *Communications of the ACM*, 26 (10), 785-93.
- Blattberg, Robert C, Gary Getz, and Jacquelyn S Thomas (2001), "Managing customer acquisition," *Direct Marketing*, 64 (6), 41-54.
- Davis, Fred D. (1989), "Perceived Usefulness, Perceived Ease Of Use, And User Acceptance of Information Technology," *MIS Quarterly*, 13 (3), 319-40.
- Davis, Fred D., Richard P. Bagozzi, and Paul R. Warshaw (1989), "User Acceptance Of Computer Technology: A Comparison Of Two Theoretical Models," *Management Science*, 35 (8), 982-1003.
- Day, George S (2003), "Creating a superior customer-relating capability," *Sloan Management Review*, 44 (3), 77-82.

DeLone, William H and Ephraim R McLean (1992), "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research*, 3 (1), 60-95.

DeLone, William H. (1988), "Determinants of Success for Computer Usage in Small Business," *MIS Quarterly*, 12 (1), 51-61.

Etezadi-Amoli, Jamshid and Ali F Farhoomand (1996), "A structural model of end user computing satisfaction and user performance," *Information & Management*, 30 (2), 65-73.

Gelderman, Maarten (1997), "Success of Management Support Systems: A literature Review and an Empirical Investigation."

Glazer, Rashi (1999), "Winning in Smart Markets," *Sloan Management Review*, 40 (4), 59-69.

Goodhue, Dale L "Development and measurement validity of a task-technology fit instrument for user evaluations of information systems," *Decision Sciences*, 29 (1), 105-38.

Goodhue, Dale L and Ronald L Thompson (1995), "Task-technology fit and individual performance," *MIS Quarterly*, 19 (2), 213-36.

Goodhue, Dale L., Michael D. Wybo, and Laurie J. Kirsch (1992), "The Impact of Data Integration on the Costs and Benefits of," *MIS Quarterly*, 16 (3), 293-311.

Greene, William H. (1997), *Econometric Analysis* (3rd ed.). Upper Saddle River NJ: Prentice Hall Inc.

Guimaraes, Tor, Magid Igbaria, and Ming-Te Lu (1992), "The Determinants of DSS Success: An Integrated Model," *Decision Sciences*, 23 (2), 409-30.

Hasselbring, Wilhelm (2000), "Information system integration," *Communications of the ACM*, 43 (6), 32-38.

Ives, Blake and Margrethe H. Olson (1984), "User Involvement and MIS Success: A Review of Research," *Management Science*, 30 (5), 586-603.

Kamakura, Wagner A, Michel Wedel, Fernando de Rosa, and Jose Afonso Mazzon (2003), "Cross-selling through database marketing: A mixed data factor analyzer for data augmentation and prediction," *International Journal of Research in Marketing*, 20 (1), 45-65.

Kim, Sung S and Naresh K Malhotra (2005), "A Longitudinal Model of Continued IS Use: An Integrative View of Four Mechanisms Underlying Postadoption Phenomena," *Management Science*, 51 (5), 741-55.

Leonard-Barton, Dorothy and Isabelle Deschamps (1988), "Managerial Influence In The Implementation Of New Technolog," *Management Science*, 34 (10), 1252-65.

Lilien, Gary L. and Arvind Rangaswamy (2004), *Marketing Engineering: Computer-Assisted Marketing Analysis and Planning*. Reading MA: Addison-Wesley.

Lilien, Gary L. , Philip Kotler, and K.S. Moorthy (1992), *Marketing Models*. Englewood Cliffs, NJ: Prentice-Hall.

Lim, Kai H and Izak Benbasat (2000), "The effect of multimedia on perceived equivocality and perceived usefulness of information systems," *MIS Quarterly*, 24 (3), 449-71.

Lindell, Michael K. and David J. Whitney (2001), "Accounting for Common Method Variance in Cross-Sectional Research Designs," *Journal of Applied Psychology*, 86 (1), 114-21.

Little, John D.C. (1970), "Models and Managers: the Concept of a Decision Calculus," *Management Science*, 16 (8), B466-85.

Nelson, Scott (2002), "Business Applications Won't Change; Expectations Should."

Pettigrew, Andrew M. (1979), "On Studying Organizational Cultures," *Administrative Science Quarterly*, 24 (4), 570-81.

Podsakoff, Philip M., Scott B. MacKenzie, Jeong-Yeon Lee, and Nathan P. Podsakoff (2003), "Common Method Biases in Behavioral Research," *Journal of Applied Psychology*, 88 (5), 879-903.

Reichheld, Frederick F (1996), "Learning from customer defections," *Harvard Business Review*, 74 (2), 56-67.

Reinartz, Werner, Manfred Krafft, and Wayne D Hoyer (2004), "The Customer Relationship Management Process: Its Measurement and Impact on Performance," *Journal of Marketing Research*, 41 (3), 293-305.

Reinartz, Werner J and V Kumar (2000), "On the profitability of long-life customers in a noncontractual setting: An empirical investigation and implications for marketing," *Journal of Marketing*, 64 (4), 17-35.

---- (2003), "The impact of customer relationship characteristics on profitable lifetime duration," *Journal of Marketing*, 67 (1), 77-99.

Rigby, Darrell (2001), "Management tools and techniques: A survey," *California Management Review*, 43 (2), 139-60.

Rigby, Darrell K, Frederick F Reichheld, and Phil Schefter (2002), "Avoid the four perils of CRM," *Harvard Business Review*, 80 (2), 101-11.

Rust, Roland T, Valarie A Zeithaml, and Katherine N Lemon (2000), *Driving Customer Equity: How Customer Lifetime Value is Reshaping Corporate Strategy*. New York, NY: The Free Press.

Sanders, Nada R and Karl B Manrodt (2003), "Forecasting software in practice: Use, satisfaction, and performance," *Interfaces*, 33 (5), 90-93.

Speier, Cheri and Viswanath Venkatesh (2002), "The hidden minefields in the adoption of sales force automation technologies," *Journal of Marketing*, 66 (3), 98-111.

Swift, Ronald S (2001), *Accelerating Customer Relationships: Using CRM and Relationship Technologies*. Upper Saddle River, NJ: Prentice Hall.

Taylor, Ronald N (1975), "Age and experience as determinants of managerial information processing and decision making performance," *Academy of Management Journal*, 18 (1), 74-81.

Udo, Godwin J. and J. Steve Davis (1992), "Factors Affecting Decision Support System Benefits," *Information & Management*, 23 (6), 359-71.

Venkatesh, Viswanath (2000), "Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model," *Information Systems Research*, 11 (4), 342-65.

Venkatesh, Viswanath, Michael G Morris, Gordon B Davis, and Fred D Davis (2003), "User acceptance of information technology: Toward a unified view," *MIS Quarterly*, 27 (3), 425-78.

Verhoef, Peter C (2003), "Understanding the effect of customer relationship management efforts on customer retention and customer share development," *Journal of Marketing*, 67 (4), 30-45.

Wierenga, Berend and Peter A M Oude Ophuis (1997), "Marketing decision support systems: Adoption, use, and satisfaction," *International Journal of Research in Marketing*, 14 (3), 275-90.

Wierenga, Berend and Gerrit H Van Bruggen (2000), *Marketing Management Support Systems: Principles Tools and Implementation*. Boston: Kluwer Academic Publishers.

Wierenga, Berend, Gerrit H Van Bruggen, and Richard Staelin (1999), "The success of marketing management support systems," *Marketing Science*, 18 (3), 196-207.

Winer, Russell S (2001), "A Framework for Customer Relationship Management," *California Management Review*, 43 (4), 89-105.

Wyse, James E and Christopher A Higgins (1993), "MIS integration: A framework for management," *Journal of Systems Management*, 44 (2), 32-37.

Zigurs, Iize and Bonnie K Buckland (1998), "A theory of task/technology fit and group support systems effectiveness," *MIS Quarterly*, 22 (3), 313-34.

Zinkhan, George M., Erich A. Joachimsthaler, and Thomas C. Kinnear (1987), "Individual Differences and Marketing Decision Support System Usage and Satisfaction," *Journal of Marketing Research*, 24 (2), 208-14.

Zmud, Robert W. (1979), "Individual Differences and MIS Success: A Review of the Empirical Literature," *Management Science*, 25 (10), 966-75.

Publications in the Report Series Research* in Management

ERIM Research Program: "Marketing"

2005

Assessing Customer Evaluation and Revenue Consequences of Component Sharing Across Brands in the Vertical Product Line

Peter C. Verhoef and Koen H. Pauwels

ERS-2005-007-MKT

<http://hdl.handle.net/1765/1936>

Intra- and Inter-Channel Competition in Local-Service Sectors

Kathleen Cleeren, Marnik G. Dekimpe And Frank Verboven

ERS-2005-018-MKT

<http://hdl.handle.net/1765/1925>

The European Consumer: United In Diversity?

Aur lie Lemmens, Christophe Croux and Marnik G. Dekimpe

ERS-2005-022-MKT

<http://hdl.handle.net/1765/1942>

Managing Product-Harm Crises

Harald J. van Heerde, Kristiaan Helsen and Marnik G. Dekimpe

ERS-2005-044-MKT

<http://hdl.handle.net/1765/6887>

Why Consumers Buy Lottery Tickets When the Sun Goes Down on Them. The Depleting Nature of Weather-Induced Bad Moods.

Sabrina Bruyneel, Siegfried Dewitte, Philip Hans Franses and Marnik G. Dekimpe

ERS-2005-045-MKT

<http://hdl.handle.net/1765/6890>

A Hierarchical Bayes Error Correction Model to Explain Dynamic Effects of Price Changes

Dennis Fok, Richard Paap, Csilla Horv th and Philip Hans Franses

ERS-2005-047-MKT

When are CRM Systems Successful? The Perspective of the User and of the Organization

Gerrit H. Van Bruggen and Berend Wierenga

ERS-2005-048-MKT

* A complete overview of the ERIM Report Series Research in Management:

<https://ep.eur.nl/handle/1765/1>

ERIM Research Programs:

LIS Business Processes, Logistics and Information Systems

ORG Organizing for Performance

MKT Marketing

F&A Finance and Accounting

STR Strategy and Entrepreneurship